DOCUMENT RESUME

ED 177 328 CE 022 864

AUTHOR Amberson, Max I.; And Others
TITLE Agricultural Manpower Project Update. Preliminary [Report]. (A Review of Existing and Projected Job Titles in Montana Agricultural Production, Agricultural Supplies and Services, Ag Mechanics, Ornamental Horticulture, Ag Resources, Ag Products, and Forestry Businesses).
INSTITUTION Montana State Univ., Bozeman. Montana Agricultural Experiment Station.
PUB DATE Feb 79
NOTE 31p.; The appendix materials will not reproduce well due to small, light type

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Agribusiness; Agricultural Education; *Agricultural Occupations; *Agricultural Production; Employment Opportunities; Employment Patterns; *Employment Projections; Employment Trends; Job Market; Labor Demands; *Labor Force; Labor Market; *Manpower Needs; Manpower Utilization; Trend Analysis
IDENTIFIERS *Montana

ABSTRACT

To determine the nature and extent of rural youth and adult educational and employment opportunities, this study assessed existing and projected job titles in agricultural production and the agribusiness sector of Montana's economy. Using job position taxonomies identified by the United States Office of Education, two survey instruments were prepared. A total of 433 (31%) agricultural production survey instruments were returned with 283 producers indicating that they used either part-time or full-time labor. Agricultural production job titles with the greatest number of employees were (1) general livestock worker, (2) general crops and livestock worker, (3) farm machinery operator, (4) agricultural mechanics, (5) combination foreman, and (6) general crops worker. A total of 386 usable agribusiness questionnaires were returned indicating that the only overall decrease in positions appears in agricultural products part-time positions. The lowest mean full-time salary appeared in ornamental horticulture, and the highest full-time salary appeared in agricultural products. In addition, the majority of positions surveyed did not require extensive previous experience and could be filled by persons with the appropriate education levels who could be trained on the job. (The survey questionnaire is appended.) (LRA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED177328

211

Preliminary

AGRICULTURAL MANPOWER PROJECT UPDATE

(A Review of Existing and Projected Job Titles in Montana Agricultural Production, Agricultural Supplies and Services, Ag Mechanics, Ornamental Horticulture, Ag Resources, Ag Products, and Forestry Businesses)

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Max L. Amberson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

by

Max L. Amberson
Douglas D. Bishop
Roger Clayton
Barbara Agocs

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

The work presented herein was performed by the Montana Agricultural Experiment Station for the period July 1, 1978 - Feb. 15, 1979

The Montana State University
Department of Agricultural and Industrial Education
Room 126, Cheever Hall
February, 1979

CE022 864

DO NOT FILM THIS PAGE

PREFACE

In 1979, the staff of the Department of Agricultural and Industrial Education initiated a statewide study to determine the nature and extent of rural youth and adult educational and exployment opportunities associated with agribusiness and production agriculture.

The objectives of the five year study were:

-To identify the number and types of occupational opportunities in the agricultural industry.

-To identify the knowledge, skills and attitudes needed by agricultural employees.

-To provide information for agricultural educators to utilize in curriculum development.

-To coordinate agricultural education programs at the several levels.

-To provide a data base for monitoring and for forecasting future employment needs in agriculture.

Eleven reports contain the results of these studies. Reports are available on interlibrary loan from Montana State University and on microfiche in the library reference source, Educational Resource Information Center (ERIC):

Ag-Business Manpower Project Manual
Ag-Business Manpower Project Report
Agricultural Producers' Manpower Project Manual
Agricultural Production Manpower Report
A Study to Determine Competencies Needed by Employees Entering Agricultural Supplies and Services Occupations
A Study to Determine Competencies Needed by Employees Entering the Grain, Feed and Seed Business
A Study to Determine Competencies Needed by Employees Entering Agricultural Production Occupations
A Study to Determine Competencies Needed by Employees Entering Agricultural Mechanics Occupations
A Study to Determine Competencies Needed in Selected Job Titles in Agricultural Products Occupations
A Study to Determine Competencies Needed in Selected Job Titles in Agricultural Resources Occupations
Competency Commonalities and Accompanying Job Titles Derived from the Six Montana Agricultural Manpower Studies

The present report is a compilation of information obtained from a manpower assessment initiated in the fall of 1978 and in keeping with the fifth objective of the comprehensive study - "to provide a data base for monitoring and for forecasting future employment needs in agriculture." Its purpose is to relate the quantitative and qualitative information garnered from the sample.

DO NOT RUM THIS PAGE

ACKNOWLEDGEMENTS

The continuation of this endeavor could not be possible without the previous cooperation of many persons and agencies who assisted in the initial studies. The present study was greatly enhanced by the assistance of Roger Clayton, a Graduate Assistant in Agricultural Education who assumed the responsibility of the logistics of data collection, supervised follow-up procedures and coded the data for computer analysis. His dedication and attention to details greatly facilitated the data yield.

The research design was the responsibility of Dr. Douglas D. Bishop and Dr. Max L. Amberson, Department of Agricultural and Industrial Education.

TABLE OF CONTENTS

PAGE

PREFACE ---------- ii

ACKNOWLEDGEMENTS ---------- iii

TABLE OF CONTENTS ---------- iv

I. SUMMARY ---------- 1
Purpose and Objective
Methods and Procedure

Agricultural Production ---------- 1

Agribusiness ---------- 3
Agricultural Supplies & Services ---------- 4
Analysis of Full-Time Positions
Analysis of Part-Time Positions

Agricultural Mechanics ---------- 5
Analysis of Full-Time Positions
Analysis of Part-Time Positions

Ornamental Horticulture ---------- 6
Analysis of Full-Time Positions
Analysis of Part-Time Positions

Agricultural Products ---------- 7
Analysis of Full-Time Positions
Analysis of Part-Time Positions

Agricultural Resources ---------- 8
Analysis of Full-Time Positions
Analysis of Part-Time Positions

Forestry ---------- 9
Analysis of Full-Time Positions
Analysis of Part-Time Positions

Data Summary ---------- 10

II. CONCLUSIONS, OBSERVATIONS AND RECOMMENDATIONS ---- 11

III. LIST OF FIGURES ---------- 14
Data Summary Comparison Among the 6 Agribusiness Taxonomies
APPENDIX A
Agricultural Employment Study Survey Form
Montana Agricultural Producer's Inquiry Form

SUMMARY

Purpose and Objectives

The primary purpose of the study was to assess existing and projected job titles in agricultural production and the agribusiness sector of Montana's economy. The job positions were placed into USOE identified taxonomies - Agricultural Production, Agricultural Supplies and Services, Agricultural Mechanics, Ornamental Horticulture, Ag Resources, Ag Products and Forestry. This study is part of a continuing effort to monitor and forecast future employment needs in agriculture in the state of Montana from 1979 to 1982.

Methods and Procedure

Agriculture Production

A survey instrument was prepared based on the first survey of producers completed in 1971. Similar demographic data were requested in the current follow-up survey. However, to streamline the instrument and reduce the amount of writing required on the part of the respondents, the specific job titles most often identified in the 1971 survey were built into the response section of the current follow-up survey. Thus, in most cases a respondent needed only check a response or write in a single figure (see Appendix A).

A draft of the instrument was field tested with a number of producers to improve the reliability and validity of the instrument. A number of modifications were made and the instrument was printed.

A cover letter was prepared by Dean Asleson which explained the project and requested help from each producer. This procedure was used in hopes it would cause the producers to remember the earlier survey, making his/her task easier.

The follow-up instrument requested information about plans for retirement, the producer's educational attainment, age and future plans for the farm or ranch which was not asked for in the 1971 survey.

Sample - The most recent list of Montana Agriculture producers available was obtained from the state ASCS. Using the new list and the list of persons contacted in the 1971 survey, the researcher began to develop a sample of respondents who were still in farming or ranching. The 1971 survey was sent only to those producers, according to IRS records, who had used either part-time or full-time help. Thus, an effort was made to send the follow-up survey to the same individuals who received the 1971 survey. Names were selected from all lists supplied by the local ASCS county office to insure some degree of representativeness.

Fourteen hundred survey instruments were sent to producers throughout the state. A total of 433 surveys were returned or just under 31 percent. Of this total, 283 producers indicated they used either part-time or full-time hired labor in their farming operation and included some labor information. A total of 185 indicated they did not hire outside labor and 16 returned the instrument saying they were no longer in farming or ranching.

Preliminary Findings - Producers appeared to be very dissatisfied with all aspects of agriculture. A few, were very blunt in their replies and took the opportunity to verbally attack agencies and individuals in administrative positions. Thus, one would have to assume, that this general attitude affected not only the number of returns, but would perhaps reflect on the accuracy of the information included in those survey instruments received. A large number of the returns included all demographic data requested, but made no attempt to include anything on wages, job titles or training required. Because of a limit of funds, no attempt was made to follow-up the survey.

A total analysis of the producers' survey is not complete at this time, however, the preliminary summarization tends to show the nature of the findings.

A. Employees in part-time job titles

1. Job titles with the greatest number of employees in 1978 were (1) General Livestock Worker, (2) General Crops Worker, (3) Farm Machinery Operator, (4) Truck Driver, (5) General Crops and Livestock Worker and (6) Irrigator.

2. The months during which the greatest number of part-time employees are hired in all six of the most popular job titles are April through September.

3. Average monthly wage not including housing and meals of those in the six most popular part-time job titles based on a very limited number reporting is:

a. General Livestock Worker ----------$565.00
b. General Crops Worker ----------$688.00
c. Farm Machinery Operator ----------$674.00
d. Truck Driver ----------$729.00
e. General Crops & Livestock Worker ----$618.00
f. Irrigator ----------$475.00

One should be cautious in using the above figures in that only a small percentage of the respondents reported the salaries paid. Also, there was a great difference in the amount allotted for housing and food.

4. It was somewhat surprising that a large number of the respondents indicated their employees needed no special educational training. However, many expressed the fact they could not find help that was properly trained.

B. Employees in full-time job titles

1. Job titles with the greatest number of employees in 1978 were: (1) General Livestock Worker, (2) General Crops and Livestock Worker (3) Farm Machinery Operator, (4) Ag Mechanics, (5) Combination Foreman, and (6) General Crops Worker.

2. Average monthly wages, not including housing and meals of those in the six most popular full-time job titles based on a very limited number reporting are:

7

a. General Livestock Worker ----------$737.00
b. General Crops and Livestock Worker --$687.00
c. Farm Machinery Operator ----------$607.00
d. Ag Mechanics ----------$755.00
e. Combination Foreman ----------$803.00
f. General Crops Worker ----------$717.00

One should be cautious in using the above figures in that only a small percentage of the respondents reported the salaries paid. Also, there was a great difference in the amount allotted for housing and food.

3. As in the case of part-time workers, the respondents did not indicate many of their employees needed much education. Few indicated they needed training beyond high school.

C. Reasons for reducing employees

1. Many producers indicated they were planning to reduce their labor force, however, very few would indicate when they plan to make the reduction. The following reasons, in order of occurrence, were given for cutting the labor force:

a. Increased mechanization
b. Cannot compete with welfare
c. Employees not available
d. Increase of family labor
e. Unsatisfactory personnel
f. Economic advantage
g. Government regulations
h. Employees not trained

D. Reasons for adding employees

1. As in the case of the reduction of employees, the respondents generally indicated why they plan to add employees, but not when. The reasons cited in order of importance were:

a. Loss of family labor
b. Business expansion
c. Economic advantage

Agribusiness

Basic research methods were used involving the selection of a sample, design and distribution by mail of a survey instrument, telephone follow-up, development of a coding rationale, preparation of the data for computer analysis and recording of the results, conclusions, observations and recommendations.

A survey form (see Appendix A) requesting information about job titles, salaries, entry level education and previous experience was sent to 3,600 businesses. Completed mail returns were received from 401 respondents. Of these returns, 45 were incomplete and were recontacted by phone and completed. Seventy-eight additional phone interviews were added, yielding a total of 386

useable returns. Ninety-four of the above 401 returns were received, but were deemed to be "non-agricultural" businesses, by their own determination, thus, there were a total of 386 total returns that were useable. Returns indicate that 80% of the businesses surveyed were actually of an agribusiness nature. Of the 3600 businesses surveyed, 2880 were deemed agribusiness. Of this population, 386 or 13.4% of the respondents returned useable surveys.

In the discussion of the taxonomy areas of agribusiness, actual data from the 386 businesses were reported. It should be pointed out that this represents only 13.4% of the actual jobs that exist. This means that for every one job reported from the data in reality, there are 7.46 jobs that exist.

Agricultural Supplies and Services

Chemical Applicator (101), Agri-Chemical Manager (102), Field Technician (103), Service Mechanic (104), Warehouseman (105), Troubleshooter (106), Sales Clerk (107), Animal (vet) Technician (108), Farrier (109), Manager (110), Counterman (111), Helper (112), Sales and Service Representative (113), Agricultural Finance (114), Bookkeeper (115), Driver (116), Dairy Inspector (117), Egg Inspector (118), Fruits and Vegetables Inspector (119), Poultry Inspector (120), Milk Tester (121), Animal Health Assistant (122), Laboratory Animal Assistant (123), Kennel Worker (124), Dog Groomer (125), Tire Repairman (126), Feed Salesman (Grain) (128), Fertilizer Sales (129), Computer Assistant (130), Secretarial/Clerical (131), Ag Engineer (132), Office Manager (133), Purchasing Agent (134), Carpenter (135), Animal Health Products Supplier (136), and Irrigation Equipment Salesman (137) comprise the 37 job titles surveyed in the recent contact of agricultural supplies and services employers. The greatest fluctuations in the number of job positions by job title occur in this taxonomy, in both full and part-time employment positions.

Analysis of Full-Time Positions - Respondents projected an increase of 42% of the total positions reported or 263 full-time position shifts. The Manager job title was the only full-time title indicating a decrease in the number of such positions as projected to 1982. This could be a result of fewer small businesses and more large businesses. The five job titles in which the major increases are projected to occur are Warehouseman, Sales and Service Representative, Agricultural Finance Officer and Bookkeeper. The preferred entry level educational requirement for these titles appears to be beyond high school with positions in agricultural finance approaching an equivalent of college as an entry level requirement. Of the 36 job titles reviewed in agricultural supplies and services occupations 7 indicated a need for previous experience at the same job title or a related job title in the same taxonomy area and only a small number required expertise in specific unique areas. The mean salary calculated from reported earnings for the job titles range from $517 (Dog Groomer) to $1,186 (Manager). There is not a direct relationship between increased levels of education and advances in beginning and maximum salaries although a trend is evident. The highest paid person was a Manager whose mean educational level was "2 years beyond high school."

Analysis of Part-Time Positions - Part-time employee positions in agricultural supplies and services showed more shuffling of positions with a total of 77 shifts of 8% of the total part-time positions reported. The greatest decrease will be in bookkeeping positions. Increases will be in the positions of Chemical Applicator, Troubleshooter, Helper and Driver. The entry level

of education is again lower than that of their full-time counterparts with "less than high school" considered acceptable.

Salaries range from $125 (Dog Groomer) to a mean salary high of $1574 (Animal Health Assistant). The great variance of part-time situations colors salary information. Because of this it is difficult to assess a relationship between advanced education and salary increments.

Agricultural Mechanics

Job titles for which data were obtained in the agricultural mechanics taxonomy were: Agricultural Mechanic (201), Set-up Mechanic (202), Tractor Mechanic's Helper (203), Parts Man (204), Small Engine Mechanic (205), Farm Equipment (206), Agricultural Technician (207), Farm Equipment Salesman (208), Irrigation Technician (209), Welder (210), Painter (211), Electrician (212), Machinist (213), and Mill Wright (214) .... a total of 14 job titles.

Analysis of Full-Time Positions - Respondents' projections to 1982 indicate an increase of 167 full-time positions or 27% of the total full-time positions reported. These increases are concentrated mainly in four job titles: Agricultural Mechanic (201), Set-up Mechanic (202) Parts Man (204), and Farm Equipment Salesman (208).

The data suggest that the desired entry level education of full-time employees is largely high school with many businesses reporting 2 yrs of post high school required. The existing situation might also prevail because of shop foreman preferring to train their own personnel.

Full-time Ag Mechanics, Set-up Mechanics and Tractor Mechanics' Helpers are the 3 most actively fluctuating job titles. Approximately half of the employees indicate that previous experience was necessary to obtain these jobs. The other approximately half of the respondents indicate that the prerequisite for employment was "experience at the same job title" or in a related area.

Mean salaries range from $718 as earned by Set-up Mechanics to $1211 (Electricians) with variances within the job title a factor of years of service and the degree to which they supervised other workers. There is no clearly established pattern which would indicate a correlation between additional education and increments in beginning and maximum salaries.

Analysis of Part-Time Positions - Information about part-time employees in agricultural mechanics job titles discloses changes in job titles for Agricultural Mechanics (201), Set-up Mechanic (202), Parts Man (204) and Farm Equipment Salesman (208), with an overall difference of 4 job positions or 3% of the total part-time jobs reported. Increases occur in part-time positions for Agricultural Mechanics and Set-up Mechanics. A decrease of 4 Parts Men positions was indicated.

The mean educational level of part-time employees is below the completion of high school for entry into the job market. Many part-time jobs are "on the job training" situations with previous experience not required. Since education is not a factor, its relationship to part-time salaries is not significant and a review of salaries delineated according to advanced education defies a trend to correlate advanced training with increased part-time salaries.

DO NOT FILM THIS PAGE

Mean salaries for part-time employees as reported raise some doubts as to their credibility since the hours, rates and resulting salaries are so diverse. Nevertheless, those reported by the recently sampled respondents range from $500 (Small Engine Mechanic) to $1,000 (Machinist).

Telephone follow-up revealed the fact that many part-time employees reach a fixed maximum hourly wage which remains constant until they receive a promotion or job change. Additional comments related to the researcher emphasized the need for employers to find willing, able persons with mechanical aptitude as prospective trainees in various job titles in the agricultural mechanics sector of the agricultural industry.

Ornamental Horticulture

Twenty-two job titles were included in the Ornamental Horticulture section of the agricultural manpower up-date. These job titles are: Groundman (301), Trainee (302), Climber (303), Manager/Supervisor (304), Foreman (305), Floral Delivery Person (306), Floral Sales Person (307), Floral Designer (308), Greenhouse Foreman (309), Greenhouse Worker (311), Grounds Supervisor (312), Crew Foreman/Landscape Planter (313), Grounds Worker (314), Landscape Aide (315), Retail Landscape & Garden (316), Nursery Worker (317), Golf Course Maintenance Worker (321), Maintenance Worker - Parks (322), Work Foreman - Parks & Rec. (323), Golf Course Mechanic (324), Golf Course Maintenance Foreman (326), and Grower (329). More of these job titles require entry level education of high school and two years beyond than those in which the educational level for entry is less than high school. This observation applies to full-time employees in these job titles.

Analysis of Full-Time Positions - Thirty-five increases or 6% of the total positions reported for full-time employees were expressed with no decreases tabulated for any of the job titles. The largest increases fall in the four job titles; Trainee, Climber, Floral Sales and Grounds Worker.

Manager/Supervisor was the only job title indicating that previous experience was vital and stated that this experience should be in the same taxonomy area in a related job title and that moving up within the business was also necessary for advancement. The remaining titles disclosed that no experience was necessary, that on the job training sufficed and that occasionally businesses responded that experience at the same job title was beneficial. Full-time ornamental horticulture employees had a salary range of $417 (Floral Delivery Person) to $1257 (Foreman) with an indication that there is an advance in salary commensurate with an advance in education. It is interesting to note that the spread of beginning and maximum salaries as related to educational level for full-time employees in ornamental horticulture is not as great as that in supplies and services and agricultural mechanics and the salaries are concentrated at the lower end of the continuum.

Analysis of Part-Time Positions - A review of part-time employment criteria for ornamental horticulture yields a change of 20 positions or 20% of the total positions reported. The largest decrease appears in the job title of Grounds Worker; perhaps due to increased mechanization. Increases are affirmed in the positions of Nursery Worker, Golf Course Maintenance Worker, Landscape Aide and Retail Landscape and Garden Workers. This taxonomy is another instance in which the entry level required for part-time employees is lower than full-time employees and is satisfied with an education equivalent of high school or less.

Part-time ornamental horticulture employees have a mean salary range of $500 (Grower, Maintenance Worker-Parks and Work Foreman-Parks and Recreation) to $667 (Golf Course Mechanic). There is relatively little difference between beginning and maximum salaries as related to educational level for part-time workers.

A cursory glance at the salary data for ornamental horticulture employees, both full and part-time indicates a slightly lower scale than in other taxonomy areas. A telephone conversation would indicate that this can be explained by the very seasonal nature of the business. Horticulture businesses indicated there are efforts to expand their operations to productive ventures on the "off-season".

Agricultural Products

The 23 Agicultural Products job titles projected to 1982 employer needs are: Flour Miller's Assistant (501), Laborer (502), Production Coordinator (503), Mill Maintenance Man (504), Production Supervisor (505), Milk Processor (506), Dairy Plant Helper (507), Salesroom Sales Person (508), Dairy Products Salesman/Milk Truck Driver (509), Buttermaker (510), Ice Cream Maker (511), Cheese Maker (512), Maintenance Engineer (513), Laboratory Technician (514), Lift Truck Operator (516), Laboratory Technician (518), Plant Maintenance Mechanic (519), Slaughterhouse Worker (520), Processed Meats Worker (521), Egg Processing Occupations (526), Grain Elevator Manage/Grain Buyer (528), Market Analysis (530), Seed Cleaner/Processor (531), Stockyard Foreman/Worker (532), Feedlot Worker (533), Mill Operator (534), Agricultural Chemist (535), Poultry Products Salesman (536), and Field Representative (537). A high school diploma and training 2 years beyond high school is the entry level educational requirement reported for these job titles for full-time employees.

Analysis of Full-Time Positions - An increase of 100 positions or 16% of the total jobs reported for full-time situations are concentrated in the job titles of Laborer, Processed Meat Worker, Meat Inspector and Grain Elevator Manager. The researcher can only speculate that increase in labor occurs due to less seasonality and increased year round operations of a larger size.

Grain Elevator Managers/Grain Buyers, Processed Meat Worker, Meat Inspector, and Retail Meat Cutter are job titles which require special schools or previous experience in the same job title or related job experience. Throughout this taxonomy area, job experience at the same job title is most frequent and desirable.

The highest mean salary for the agricultural products taxonomy for full-time employees is for the job title Field Representative at $1667 per month. The lowest mean salary ($500/mo.) appeared in 2 job titles - Laborer and Egg Processing Occupations. When comparing lower and upper limits of salaries as related to educational levels, there does not appear to be a consistant indication that there is a progressive relationship. A review of the spread of the data suggests that the greatest number of respondents are placed in the category of needing a high school diploma. No one in the job titles Buttermaker, Ice Cream Maker, Cheese Maker, Maintenance Engineer, Laboratory Technician, Lift Truck Operator, and Plant Maintenance Mechanic reported an educational level above high school.

Analysis of Part-Time Positions - An overall loss of thirteen positions for part-time employees appears only in the agricultural products taxonomy. Although

other taxonomies show fluctuations, the overall picture is one of job increases.

A major decrease appears in the Laborer job title which one could conclude to mean that the only significant increase for part-time positions is for Meat Inspectors.

Once again the entry level education for part-time employees for most job titles is below high school completion.

The lowest mean salary reported was $442 for a Buttermaker. The highest part-time mean salary is $829 earned by a Dairy Products Salesman. Beginning and maximum salary data related to educational levels are too sparse to permit any conclusions. The largest number of salaries are reported at the high school diploma level with a cluster of salaries reported at the "no preference" code which does not provide any information about definite educational levels.

Agricultural Resources

Twenty-three job titles were canvassed in the Agricultural Resources Taxonomy, yielding an increase of 57 full-time job positions or 9% of the total full-time positions reported in the following job titles: Forestry Technician (404), Land Use Planning Aide (405), Land Use Planning Technician (406), Campground Manager (408), Soil Conservationist (421), Range Conservationist (422), Soil Engineer (423), Soil Scientist (424), Engineering Technician (425), Clerk (426), ASCS or Other Government Agency Reporter/Public Relations (427), Extension Agent/Ag Educator (428), Crop Insurance Adjuster (429), Crop Insurance Sales (430), Biological Technician (431), Agricultural Resource Technician (432) and Agricultural Chemist (433).

Analysis of Full-time Positions - Almost half of the increases in full-time positions are in the job title of Extension/Agricultural Educator with the next greatest increase in the job title of Soil Conservation Technician. A persual of the educational entry level data suggest that high school education and beyond is needed for this job title. This is not unexpected since many of the job titles reviewed are more professional, paraprofessional or technical in character. Despite the specialized training implied in the required educational entry level, Conservation Officers, Soil Conservation Aides, and Biological Technicians were the only job titles suggesting that previous experience was mandated, preferably at the same job title or in the same taxonomy area in a related job title.

The mean salary for full-time personnel ranges from a low of $500 in the job title, Land Use Planning Aide to $1478 reported for a Crop Insurance Salesman. It is not surprising to note that there is a decided relationship between advanced education and increased salaries. Many positions in this taxonomy appear in government agencies where Civil Service ratings are predicated on educational preparation with resulting financial advancement for sequential grade levels.

Analysis of Part-time Positions - Despite a decrease of 10 part-time positions in the job title, Soil Conservation Aide, there is an overall increase of 20 part-time positions or 15% of the total number of job titles reported. The largest need will be for Crop Insurance Adjustors.

Educational entry requirements for part-time agricultural resources employees are again lower than their full-time contemporaries, with a disbursement of "less than high school" to equal to full-time requirements for professional part-time work opportunities.

Mean salaries range from $300 (Campground Maintenance Person) to $914 earned by Range Conservationists.

Data for beginning and maximum salaries as related to education are very sparse as reported for part-time employees in Agricultural Resources. Nevertheless, an assumption could be made that salaries are progressively related because of the nature of the job titles and the same conditions that prevail for full-time employment with government agencies can be applied to part-time help.

Forestry

The Forestry taxonomy contained 14 job titles: Forestry Aid (601), Logging Skidder Operator (602), Wood Producer (603), Sawyer (604), Sawmill Worker (605), Forest Fire Fighter (607), Forest Fire Suppression Crew Leader (611), Loader Operator (613), Professional Forester (614), Knot Bumper (615), Forest Resource Clerk (616), Forest Technician (617), Forestry Heavy Equipment Operator (618), and Woods Laborer (619).

This is the only taxonomy in which the increases in the part-time positions (11 and 9% of the total jobs reported) are higher than the increases in full-time employees - 4 positions or 1% of the total positions reported.

Analysis of Full-Time Positions - Two Forestry Aides and one additional Crew Leader and Forest Technician comprise the increases in full-time positions. Full-time positions in Forestry have the highest entry level of education with 2 years beyond high school as a recognizable trend.

Previous experience at the same job title or in a related title was deemed important in all but one job title; Sawmill Worker.

The mean salary range for full-time forestry employees starts at $800 for a Forest Resource Clerk and the upper mean salary limit is $1417 reported for Sawyers. A review of beginning and maximum salaries keyed to educational level does not substantiate a progressive relationship since "no preference" educational level columns contain the highest strata of salaries.

Analysis of Part-Time Positions - The major increase in part-time positions falls in the Forest Fire Fighter job title and in the same full-time job titles of Crew Leader and Forest Technician. Part-time employees in this taxonomy as well as the other appear to have a lower entry level of education (below high school) as do their full-time equivalents.

Three job titles, Forestry Aide, Sawyer, and Forest Fire Fighter represent the lowest end of the salary range at $667. Two job titles, Logging Skidder and Crew Leader contain the highest part-time mean salary of $1,000.

A comparison of salaries related to educational levels below high school and completion of high school reveals an upward progression.

DATA SUMMARY - AGRIBUSINESS

A data summary comparison among the six taxonomies for six criteria - number of job position increases, full and part-time; number of job position decreases full and part-time; entry level education, full and part-time; mean salary range - full and part-time from lowest to highest; the relationship between increased educational level and advance in beginning or maximum salaries and need for previous experience appear in Figure 1, page 14.

CONCLUSIONS, OBSERVATIONS AND RECOMMENDATIONS

The purpose of this section is to present general conclusions, observations and recommendations based upon the analysis and summarization of data collected.

CONCLUSIONS*

1. With the exception of part-time professional employment in Agricultural Resources, all taxonomies show a lower level of entry education for part-time positions than for full-time positions.

2. The greatest number of job title position fluctuations' projections occur in Agricultural Supplies and Services, followed by Agricultural Mechanics.

3. The only decrease overall in positions appears in Agricultural Products part-time positions.

4. The lowest mean full-time salary appears in Ornamental Horticulture.

5. The highest full-time salary appears in Agricultural Products.

6. The highest and lowest beginning mean salary for part-time employees are in Agricultural Supplies and Services.

7. Agricultural Resources occupations are the only ones indicating a consistant relationship between advanced salaries for additional education.

8. The majority of positions surveyed do not require extensive previous experience and can be filled by persons with appropriate educational levels who can be trained on the job.

9. The most frequent previous experience deemed necessary was that in the same job title or in a related job title in the same taxonomy area.

OBSERVATIONS

The researcher cannot sufficiently stress the effectiveness and importance of the telephone follow-up as a means of increasing valid instruments and to obtain important information. The following comments are a summary of some of the observations or exposures facilitated by the personal outreach.

1. The telephone contact with Montana agribusinesses is an excellent public relations outreach for the University. Overall, the response from the people is positive. As a matter of fact, not a single "crank response" was received in over 75 follow-up calls to persons in the agribusiness sector.

2. Salaries and entry into jobs are frequently effected by the employers assessment of the individual. This substantiates the findings of previous studies where "willingness to work" and other personality traits proved to be very important when rated by employers.

* See Figure 1, page 14.

3. Employers object to the attitude of many college graduates who appear to be more interested in their potential salary rather than in what they can offer to the company. One employer expressed that often the first year of employment for a green worker (graduate) is a liability for them and in reality the worker should be paying for the privilege of the opportunity rather than expect to be paid.

4. Many businesses in Montana are family businesses where the husband and wife assume full responsibility for the operation. The woman generally does the clerical work and anything else that she can do to help out and the husband does the technical work.

5. The most frequently omitted portion of the form was in regard to salaries, perhaps considered privileged information.

6. The last few days of the month are not a good time to make calls to large businesses as they are closing out their books and the bookkeeper, who generally provides salary information, is just too busy to respond.

7. There is considerable disparity between what we consider is a position that requires agricultural training or competencies. Many people in business again prefer to train their own people and this goes from one end of the continuum to the other in terms of the complexity of the job and the skills required outside legal licensing requirements.

8. Sematics is always a problem when conducting a survey. There appears to be some confusion in the field as to just what is vocational agriculture training. Some people think that it is only production agriculture. For instance, one of the largest grain firms in the state did not feel that it was necessary for their salesmen to have vocational agriculture training. The discipline has apparently failed to either convey the message that they also educate students to enter agribusiness or in fact vocational agriculture programs remain primarily oriented towards production agriculture.

RECOMMENDATIONS

1. Since the increase in employees, projected to 1982 is to be in agricultural supplies and services and mechanics, consideration should be given by persons planning and teaching vocational agriculture programs to accommodate to this expansion.

2. To accommodate the expansion, specialized vocational agriculture programs should follow one of two patterns:

   a. Organize specialized curriculum in agriculture supplies and services, mechanics at the junior and senior high school level.

   b. Continue to teach primarily agricultural production, but arrange the supervised occupational experience programs (S.O.E.P.) of students in an agribusiness setting; preferably on a cooperative program during the junior and senior years.

3. Analyze the data on a multi-county or regional basis so that it will have greater impact on local school boards, administrators and teachers who are planning and bringing about program changes.

4. Make students in Montana aware of the findings in this study - job titles, education required, experience needed, etc. by making these data available to counselors and teachers of vocational agriculture education throughout Montana.

5. It would appear that in agricultural products and agricultural resources, this education might well be left to 2 year post high school educational institutions since these are the hiring patterns of business that demands specialized knowledge and skills that employers do not seem willing to supplement by on the job training.

FIGURE I

DATA SUMMARY COMPARISON AMONG THE SIX AGRIBUSINESS TAXONOMIES

CRITERIA	Employment FullTime - FTE PartTime - PTE	Ag Supplies Services		Ag Mechanics		Ornamental Horticulture		Ag Products		Ag Resources		Forestry	
		Reported from sample	Data projected to population	sample	proj	sample	proj	sample	proj	sample	proj	sample	proj.
No. of Job Positions (overall)	FTE	263	1962	167	1246	35	261	100	746	57	425	4	30
	PTE	77	574	4	30	20	149	0	0	20	149	11	82
No. of Job Position Decreases	FTE	0		0		0		0		0		0	
	PTE	0		0		0		-13		0		0	
Entry Level Education	FTE	High School (+)		High School		High School+2		High School+2		High School+2		High School+2	
	PTE	Less than H.S.		Less than H.S		High Schoolor less		High Schoolor no preference		Less than HS equal to fld training		Less than HS	
Mean Salary Range	FTE	$517-$1186		$718-$1211		$417-$1257		$500-$1667		$500-$1478		$800-$1417	
	PTE	$125-$1574		$500-$1000		$500-$667		$442-$829		$300-$914		$667-$1000	
Relationship between increased Educational level & Advance in Beginning &Maximum Salaries		Salary upward as educ. increases Positive trend.		No pattern		No pattern		No pattern		Positive trend sal. upward as educ. increases		No pattern	
Need for Previous Experience		7 or 36 titles indicated need for prev. experience . Codes 3,4,5		Code 3		For Managers Codes 4 & 6 Others - No Experience		Managers & Buyers All Codes		Code 3 Most others		2 Titles Code 3 - Others	

Experience Code: 3 - Experience at the same job title
4 - Experience in taxonomy area i.e. related job title.
5 - Related experience, special school - expertise in specific unique area.
6 - Move up within business or job area.

APPENDIX A

DO NOT FILM THIS PAGE

MONTANA STATE UNIVERSITY
DEPT. OF AGRICULTURAL EDUCATION
AGRICULTURE EMPLOYMENT STUDY

I. Identification:

A. Name of Business _____

B. Mailing Address _____

_____ Zip

C. Telephone number _____

D. Nature of Business (check appropriate response(s)--see definitions on attached sheet.

☐ Ag Services/Supplies ☐ Ornamental Horticulture ☐ Ag Products ☐ Non-Agricultural
☐ Ag Mechanics ☐ Ag Resources ☐ Forestry

II. Employment Data:

Please indicate all positions (job titles) in your business where some amount of vocational agriculture training is desirable or would be beneficial.

Job Title(s) (select from List A on back) & list reference # and Job Title		Number of present employees who spend the majority of their time in this job title.		Expected Number of employees in this job title in 1982.		Entry level education required of employees in this job title (select from list B & indicate by reference #) see below.		If previous work experience is desired for this job title indicate type & length of time.		Salary of Employee in this job title.				Reason(s) for adding or reducing number of employees in this job title. Select from list C or D below & indicate by ref. #									
										Beginning		Maximum		Reasons/Adding (C)					Reduction(D)				
Ref. #	Title	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Type	Time	Full T.	Part T.	Full T.	Part T.										

E. Please indicate the percentage of your business income derived from each of the following areas:

	Percentage
1. Ag Services/Supplies	
2. Ag Mechanics	
3. Ornamental Horticulture	
4. Ag Resources	
5. Ag Products	
6. Forestry	
7. Non-Agricultural	
TOTAL	100%

III. Reference Lists

A. Job Titles--See back

B. Education

Ref. #	
1	Less than High School
2	High School Diploma
3	2 yrs. beyond high school
4	College
5	No preference
6	Other--specify

C. Reasons for Adding Employees

Ref. #	Reason
1	Business Expansion
2	Economic Advantage
3	Loss of Family Labor
4	Other (specify)
5	
6	

D. Reasons for Reducing Employees

Ref. #	Reason	Ref. #		Ref. #	Reason
1	Business reduction	7	Cannot compete with welfare	13	Selling or sold operation
2	Normal Turn over	8	Employees not available	14	OSHA requirements
3	Retirement	9	Economic Advantage	15	Other (specify)
4	Loss of Family Labor	10	Increase family labor	16	
5	Employees not trained	11	Government Regulations	17	
6	Unsatisfactory Personnel	12	Increased Mechanism		

Reference List A
Job Titles

Ag Services/Supplies	
Ref. #	Job Title
101.....	Chemical Applicator
102.....	Agri-Chemical Manager
103.....	Field Technician
104.....	Service Mechanic
105.....	Warehouse Man
106.....	Trouble Shooter
107.....	Sales Clerk
108.....	Animal (vet) Technician
109.....	Farrier
110.....	Manager
111.....	Counterman
112.....	Helper
113.....	Sales & Service Representative
114.....	Agricultural Finance
115.....	Bookkeeper
116.....	Driver
117.....	Dairy Inspector
118.....	Egg Inspector
119.....	Fruit & Vegetable Inspector,
120.....	Poultry Inspector
121.....	Milk Tester
122.....	Animal Health Assistant
123.....	Laboratory Animal Assistant
124.....	Kennel Worker
125.....	Dog Groomer
126.....	_____
127.....	_____
128.....	_____
129.....	_____
130.....	_____

Ag Mechanics	
Ref. #	Job Title
201.....	Agricultural Mechanic
202.....	Set-up Mechanic
203.....	Tractor Mechanics Helper
204.....	Parts Man
205.....	Small Engine Mechanic
206.....	Farm Equipment
207.....	Agricultural Technician
208.....	Farm Equipment Salesman
209.....	Irrigation Technician
210.....	Welder
211.....	Painter
212.....	_____
213.....	_____
214.....	_____
215.....	_____
216.....	_____

Ornamental Horticulture	
Ref. #	Job Title
301.....	Groundman
302.....	Trainee
303.....	Climber
304.....	Manager/Supervisor
305.....	Foreman
306.....	Floral Delivery Person
307.....	Floral Sales Person
308.....	Floral Designer
309.....	Greenhouse Foreman
310.....	Floral Shop Manager
311.....	Greenhouse Worker
312.....	Grounds Supervisor
313.....	Crew Foreman - Landscape Planter
314.....	Grounds Worker
315.....	Landscape Aide
316.....	Retail Landscape & Garden
317.....	Nursery Worker
318.....	Plant Propagator
319.....	Nursery Mechanic
320.....	Nursery Salesman
321.....	Golf Course Maintenance Worker
322.....	Maintenance Worker - Parks
323.....	Work Foreman - Parks & Rec.
324.....	Golf Course Mechanic
325.....	Golf Course Pest Control Spec.
326.....	Golf Course Maintenance Foreman
327.....	Golf Course Irrigation Spec.
328.....	_____
329.....	_____
330.....	_____
331.....	_____
332.....	_____

Ag Resources	
Ref. #	Job Title
401.....	Fish Conservation Worker
402.....	Fish Hatchery Worker
403.....	Fish Research Technician
404.....	Forestry Technician
405.....	Land Use Planning Aide
406.....	Land Use Planning Technician
407.....	Zoning Compliance Officer
408.....	Campground Manager
409.....	Campground Maintenance Person
410.....	Park Aide
411.....	Park Maintenance Person
412.....	Hunting & Fishing Guide
413.....	Soil Conservation Aide
414.....	Soil Conservation Technician
415.....	Water Treatment Plant Operator
416.....	Waste Water Technician
417.....	Conservation Aide
418.....	Conservation Officer
419.....	Game Farmer
420.....	Wildlife Technician
421.....	_____
422.....	_____
423.....	_____
424.....	_____
425.....	_____

Ag Products	
Ref. #	Job Title
501.....	Flour Miller's Assistant
502.....	Laborer
503.....	Production Coordinator
504.....	Mill Maintenance Man
505.....	Production Supervisor
506.....	Milk Processor
507.....	Dairy Plant Helper
508.....	Salesroom Sales Person
509.....	Dairy Products Salesman & Milk Truck Driver
510.....	Butter Maker
511.....	Ice Cream Maker
512.....	Cheese Maker
513.....	Maintenance Engineer
514.....	Laboratory Technician
515.....	Plant Electrician
516.....	Lift Truck Operator
517.....	Instrument Technician
518.....	Laboratory Technician
519.....	Plant Maintenance Mechanic
520.....	Slaughter House Worker
521.....	Processed Meats Worker
522.....	Breaking House Worker
523.....	Retail Meat Cutter
524.....	Meat Inspector
525.....	Poultry Processing Occupations
526.....	Egg Processing Occupations
527.....	Wool Buyer
528.....	Wool Grader
529.....	_____
530.....	_____
531.....	_____
532.....	_____
533.....	_____

Forestry	
Ref. #	Job Title
601.....	Forestry Aid
602.....	Logging Skidder Operat
603.....	Wood Producer
604.....	Sawyer
605.....	Sawmill Worker
606.....	Forest Fire Ranger
607.....	Forest Fire Fighter
608.....	Forest Insect Ranger
609.....	Smoke Jumper
610.....	Fire Warden
611.....	Forest Fire Suppression, Crew Leader
612.....	Christmas Tree Farmer
613.....	_____
614.....	_____
615.....	_____
616.....	_____
617.....	_____

MONTANA AGRICULTURAL PRODUCER'S INQUIRY

This is the inquiry mentioned in my letter and is being sent to you as a part of the study regarding agricultural manpower. The method, in most cases, of checking X the appropriate answer makes it possible to fill out the blank almost as rapidly as you read it.

---

1. My farm operation is (check all that apply). If you check "other" give the type of operation.
   ○ Cattle ○ Dairy ○ Small Grain ○ Other (specify)
   ○ Sheep ○ Hogs ○ Forage Crops _____
   ○ Root Crops _____

2. My educational training has included (check highest level)
   ○ High School (College prep) ○ 2 yr. Vocational School ○ Other _____ (specify)
   ○ High School (Vocational) ○ College degree (specify area)

3. My age is: ○ 20 to 25 ○ 26 to 30 ○ 31 to 40 ○ 41 to 50 ○ 51 to 60 ○ 61 to 70

4. Please indicate which of the following best describes your future plans.
   I plan to retire in approximately: ○ 5 yrs. ○ 10 yrs. ○ 15 yrs. ○ No definite plans
   I plan to turn the farm over to another person in approximately: ○ 5 yrs. ○ 10 yrs. ○ 15 yrs.
   I plan to sell the property in approximately: ○ 5 yrs. ○ 10 yrs. ○ 15 yrs.

5. The number of acres in my operation is: (check one)
   ○ 0-50 ○ 51-100 ○ 101-300 ○ 301-500 ○ 501-1000 ○ 1001-2000 ○ 2001-4000 ○ 4001-6000 ○ 6001-10,000 ○ 10,000-Over

6. According to ASCS classification, my operation is:(check one)
   ○ Owner/Operator ○ Operator ○ Joint Operator ○ Corporation ○ Partner ○ Joint Owner/Operator ○ Owner ○ Owner/Operator Corporation ○ Owner/Operator Partnership ○ Other _____ specify

7. Which of the following benefits do you provide for your employees? (check all that apply)
   ○ Health ins. ○ Liability ins. ○ Life ins. ○ Retirement plan ○ Social Security ○ Workmen's Comp. ○ Sick leave benefits ○ Paid Vacation ○ Profit sharing ○ Housing (furnished) ○ Housing (unfurnished) ○ Room & board ○ Meals only ○ Transportation ○ Fuel Allowance ○ Cash Bonus ○ Other _____ Specify ○ Garden space ○ Run livestock(limited) ○ Raise crops(limited) ○ No benefits

8. Total number of seasonal employees you hired in 1977 (other than family labor): [ ]

9. Total number of yr. round employees you hired in 1977 (other than family labor): [ ]

DO NOT FOLD, STAPLE OR MUTILATE

MONTANA AGRICULTURAL PRODUCER'S INQUIRY: Page 2. Section 10 (seasonal jobs) and Section 11 (full-time jobs) refer to the various job titles in which you classify your employees. Use one for each title and complete the items in that line by using an X or filling in spaces.

10. Seasonal Job Titles	Number of Employees in this title in 1978	For each job title indicate with an X the month(s) that employee(s) worked in 1977												Monthly income you provided for employee(s) in each job title. (fill appropriate blank)			Indicate with an X the educational requirement for each job title.				
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Wages	Value of house or room	Value of Meals	None	8th grade	High S. grad.	Voc. Tech.	College Degree
General Farm Worker																					
Livestock																					
Crops																					
Crops & Livestock																					
Farm Machinery Operator																					
Ag Mechanic																					
Irrigator																					
Ranch Foreman (Livestock)																					
Ranch Foreman (crops)																					
Foreman (combination)																					
Truck Driver																					
Other (Specify)																					

11. Full-time job Titles	Number of Employees in this title in 1978	Monthly income you provide for employee(s) in each job title			Indicate with an X the education requirement for each job title.				
		Wages	Value of house or room in $$$	Value of meals in $$$	None	8th grade	High S. Grad.	2-yr. Vo-Tech	College Degree
General Farm Worker									
Livestock									
Crops									
Crops & Livestock									
Farm Machinery Operator									
Ag Mechanic									
Irrigator									
Ranch Foreman (Livestock)									
Ranch Foreman (crops)									
Foreman (combination)									
Truck Driver									
Other (Specify)									

MONTANA AGRICULTURAL PRODUCER'S INQUIRY (Projections): This section is an inquiry into the reasons for REDUCING employees and not replacing them in the corporation.

Reasons for REDUCING employee numbers (will not be replaced)	Check Reason	Job title(s) of positions to be eliminated (see pg2)	Number Fulltime Employees Reduced			Number Part-time Employees Reduced		
			1978	1979	1980	1978	1979	1980
Business Reduction								
Normal Turnover								
Retirement								
Loss of Family Labor								
Employees Not Trained								
Unsatisfactory Personal								
Cannot compete with Welfare								
Employees not available								
Economic Advantage								
Increase Family Labor								
Government Regulations								
Increased Mechanism								
Selling or Sold Operation								
OSHA Requirements								
Other (specify)								

This section is an inquiry into the reason(s) you plan to ADD employees that are not on the payroll.

Reasons for ADDING employees to the current work force.	Check Reason	Job title(s) of positions to be added (see pg 2)	Number Fulltime Employees Added			Number Part-time Employees Added		
			1978	1979	1980	1978	1979	1980
Business Expansion								
Economic Advantage								
Loss of Family Labor								
Other (Specify)								

CSU-LIBRARY